

Delta County Noxious Weed Management Plan 2020



Adopted April 8, 2020

DELTA COUNTY WEED MANAGEMENT PLAN 2020

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TABLE OF CONTENTS

I.	Introduction.....	1
II.	Definitions	1
III.	Statement of Delta County’s Weed Program	2
	List A Noxious Weeds	2
	List B Noxious Weeds	3
	List C Noxious Weeds	3
IV.	Delta County Weed Management Plan Goals	5
	Management and Prevention.....	5
	Public Education	5
	County Departmental Cooperation	5
	Intergovernmental Cooperation	6
	Management Methods	6
	Enforcement	6
	Conclusion	6
	APPENDIX A – State Listed Noxious Weeds in Delta County.....	7
	List A Noxious Weeds	7
	List B Noxious Weeds	8
	List C Noxious Weeds	17



Native Prairie Thistle

I. Introduction

Several species of plants have become a threat to the economic and environmental value of land in Delta County Colorado. These noxious weeds are non-native to the United States and have no natural predators or diseases to keep them in check. They are rapidly displacing native vegetation, causing a loss of native ecosystems' stability and diversity, while negatively effecting agricultural and recreational resources.

Pursuant to §35-5.5-101, *et seq.*, C.R.S., the Colorado Noxious Weed Act, the State of Colorado has mandated that “a countywide plan must be implemented by every county to prevent further damage by these noxious weed species”.

In 1998 Delta County hired a Weed Program Manager, organized the Delta County Weed Advisory Board and in 2000 adopted a County Weed Management Plan for the purposes of fulfilling its responsibilities of the Act and began managing noxious weeds on County owned properties and right-of-ways. Since 2000, the Act has been revised and therefore certain provisions of the original Delta County Weed Management Plan have also undergone revisions to accurately reflect the provisions of the Act.

II. Definitions

All definitions used within this plan are consistent with the “*Colorado Noxious Weed Act*” §35-5.5-101-119 C.R.S. (2003) and the “*Permanent Rules Pertaining to the Administration and Enforcement of the Colorado Weed Management Act*” 8 C.C.R. 1203-19.

- A. **Act** means the Colorado Noxious Weed Act §35-5.5-101-119 C.R.S. (2003), as amended.
- B. **BMP** means “Best Management Practices,” which are techniques or policies that are recognized by science as the most efficient means of limiting or eliminating species of noxious weeds. BMP’s will change over time as more scientific information is provided for controlling noxious weed species.
- C. **IPM** means “Integrated Pest Management” and refers to different types of management techniques such as Mechanical, Biological, Cultural and Chemical control.
- D. **BOCC** means the Board of County Commissioners of Delta County, Colorado.
- E. **Control** shall mean to manage the populations of noxious weed species so that the population is maintained or reduced in size.
- F. **County** means the unincorporated areas of Delta County, Colorado.
- G. **Elimination** shall mean the removal of the seed source.
- H. **Eradication** shall mean removing the reproductive success of noxious weed species or specified noxious weed populations to zero and permanently eliminating the species or populations within a specified period of time.

- I. **Program Manager** shall mean the Delta County Administrator.
- J. **Rules** shall mean § 8 C.C.R. 1206-2 the Permanent Rules Pertaining to the Administration and Enforcement of the Colorado Weed Management Act.
- K. **Appendix A** is the attachment that lists all State Listed Noxious Weeds within Delta County and IPM techniques for controlling those weeds.

III. Delta County's Weed Program

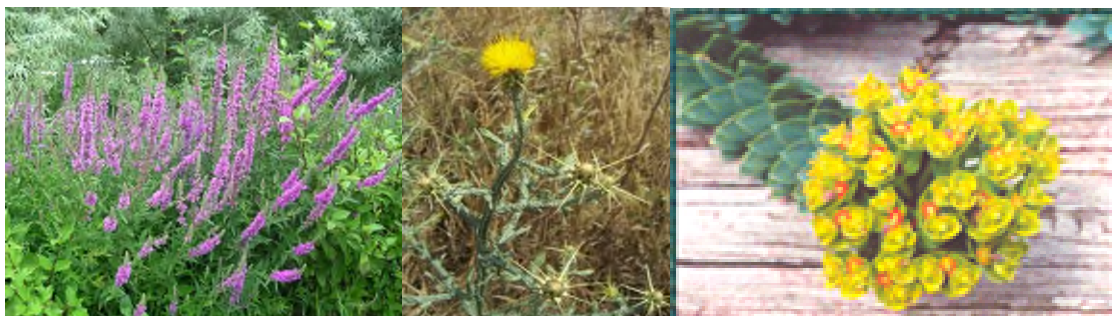
Thousands of acres of land in the County are infested with noxious weed species listed in this document. Weed science experts estimate that weed populations increase 15 percent annually if no control measures are imposed. Such an increase in weed populations poses a serious threat to the economic value and environmental stability of the land and water in the County.

The weed problem in the County is of concern not only to the agricultural community, but to the urban, recreational and small landowner communities as well. Problem areas include roadsides, open space, residential subdivisions, municipal areas, private property, and state and federal lands.

The BOCC has declared that all noxious weeds listed below, and all noxious weeds identified in the Rules, be subject to integrated management in accordance with the requirements of these regulations, the Act, and the Rules. The specific noxious weed species listed below have been identified by the BOCC to be present in the County, to be undesirable, and are designated to be managed in accordance with the requirements of the Act and Rules:

List A Noxious Weeds: All List A noxious weed species listed below, and any newly discovered infestation of other List A noxious weed species, shall be eliminated or eradicated in accordance with applicable provisions of the Act and Rules.

- *Myrtle spurge* (*Euphorbia myrsinintes*)
- *Purple loosestrife* (*Lythrum salicaria*)
- *Yellow Starthistle* (*Centaurea solstitialis*)



Purple loosestrife

Yellow starthistle

Myrtle spurge

List B Noxious Weeds: All List B noxious weed species listed below, and any newly discovered infestation of other List B noxious weed species, shall be managed in accordance with applicable provisions of the Act and Rules, and the IPM's listed in Appendix A.

- *Absinth wormwood (Artemisia absinthium)*
- *Bouncingbet (Saponaria officinalis)*
- *Bull thistle (Cirsium vulgare)*
- *Canada thistle (Cirsium arvense)*
- *Chamomile (Mayweed- Anthemis cotula), (Scentless- Matricaria perforate)*
- *Common tansy (Tanacetum vulgare)*
- *Dame's rocket (Hesperis matronalis)*
- *Diffuse knapweed (Centaurea diffusa)*
- *Hoary cress – Also known as Whitetop (Cardaria draba)*
- *Houndstongue (Cynoglossum officinale)*
- *Jointed goatgrass (Aegilops cylindrca)*
- *Leafy spurge (Euphorbia esula)*
- *Musk thistle (Carduus nutans)*
- *Oxeye daisy (Chrysanthemum leucanthemum)*
- *Perennial pepperweed (Lepidium latifolium)*
- *Plumeless thistle (Carduus acanthiodes)*
- *Russian knapweed (Centaurea repens)*
- *Russian olive (Elaeagnus angustifolia)*
- *Saltceder (Tamarix sp.)*
- *Scotch thistle (Onopordum acanthium)*
- *Spotted knapweed (Centaurea maculosa)*
- *Wild caraway (Carum carvi)*
- *Yellow toadflax (Linaria vulgaris)*

List C Noxious Weeds: All List C noxious weed species listed below shall be controlled at a level determined by this Weed Management Plan (see Appendix A) in accordance with the minimum standards of List A and List B species.

- *Chicory (Cichorium intybus)*
- *Common burdock (Arctium minus)*
- *Common mullein (Verbascum thapsus)*
- *Downy brome-Also known as Cheatgrass (Bromus tectorum)*
- *Field Bindweed (Convolvulus arvensis)*
- *Halogeton (Halogeton glomeratus)*
- *Johnsongrass (Sorghum halepense)*
- *Poison hemlock (Conium maculatum)*
- *Puncturevine-Also known as Goat heads(Tribulus terrestris)*
- *Quackgrass (Elymus repens)*
- *Redstem filaree (Erodium cicutarium)*



*Russian knapweed
infestation along
roadside, spreading
into neighboring
private property*

IV. Delta County Weed Management Plan Goals

Management and Prevention

The primary goals of the Delta County Weed Management Plan are to prevent the establishment of any and all new weed species, manage existing populations of List A, B and C species and to prevent the spread to previously uninfected areas in accordance with the requirements of the Act and Rules. In order to accomplish this goal Delta County Government, through the Program Manager, will:

- Establish weed management areas.
- Identify areas requiring intensive management.
- Aggressively manage existing infestations to prevent their spread and reduce density.
- Establish BMP for any and all environmental situations.
- Assist Home Owners Associations and individual property owners in managing their weed populations.
- Provide technical and educational support to the citizens of Delta County, municipalities, state and local organizations.
- Aggressively undertake intense management of any and all new species through weed awareness, education, early detection, and rapid response.
- Comply with the provisions of the Act and Rules.
- Manage undesirable plants on County owned properties and right-of-ways.
- Initiate and maintain communications with landowners who are effected by *List A Species* and populations of *List B* species designated for elimination or eradication by the Commissioner of Agriculture, and carry out any and all oversight necessary to ensure compliance with the Rules.
- Provide property owners with technical assistance directed at controlling or eliminating those species listed in this Plan.

Public Education

Education is essential to the sustainable success of the Plan. The Program Manager will reach out to County residents through educational workshops, private consultations, HOA meetings, volunteer days, educational materials and newspaper articles. Education will include:

- Noxious weed identification.
- Best management practices.
- Compliance with the Act and Rules.

County Departmental Cooperation

Certain departments within Delta County Government are in an excellent position to make positive impacts on the weed problem in Delta County. The Program Manager will identify and work closely with these departments to institute management practices that stress the importance of preventing the spread of, and damage by, noxious weeds on properties managed by the County.

Intergovernmental Cooperation

Delta County Government, through its Program Manager, will establish working relationships with federal, state and other local governments to manage weeds across property lines and jurisdictional boundaries. These relationships will include:

- Develop and implement weed management plans for various entities.
- Provide contract labor to conduct weed control activities.
- Provide education to staff and citizens.

Management Methods

The management techniques prescribed in the existing “*Rules*” will be utilized in Delta County Government’s management of *List A* weeds. In addition to these requirements, Delta County Government will determine which IPM’s are best suited to manage each List B and List C species. Refer to Appendix “A” for accepted IPM’s for individual species.

Enforcement

Enforcement of the Delta County Weed Management Plan is authorized and conducted pursuant to the Noxious Weed Act and the Delta County Land Use and Development Code and Access Permit language. The Act states that local governments are directed to take the necessary steps to manage the noxious weeds within their jurisdiction, and provides specific authorization for local enforcement of the jurisdictions duly adopted Weed Management Plan. The County’s Enforcement provisions for its Weed Management Plan are codified in the Land Use and Development Code and Access Permit language.

Conclusion

Delta County is rich in agricultural and natural resources which are increasingly threatened by noxious weeds. If left unchecked, these plants crowd out native and desirable vegetation, leaving nothing but a monoculture of weeds. The costs to manage weed species on private and public lands only increases as populations increase. With continued education and cooperative weed management efforts, it is possible to eradicate many of these species, but everyone must do their part. For more information about the Colorado Noxious Weed Act, visit the [Colorado Department of Agriculture Noxious Weeds web page](#).



Native Green
Gentian

Appendix A

STATE LISTED NOXIOUS WEEDS IN DELTA COUNTY

Accepted Integrated Pest Management for Individual Noxious Weed Species

“List A” Noxious Weeds

Myrtle spurge: A perennial that spreads by seed and creeping rootstocks. This plant can rapidly expand into sensitive ecosystems, displacing native vegetation and reducing forage for wildlife.

Management methods:

- Cultural: Keeping desirable vegetation healthy and thick will help keep invaders out. Prevent the establishment of new infestations by minimizing disturbance and seed dispersal. Survey your land regularly to detect new invaders and eradicate any new populations quickly.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use. *Herbicide selection MUST coincide with Colorado Department of Agriculture recommendations for this specific plant.*
- Biological: Bio-control agents are not included in the prescribed management plans by the State for List A Species.
- Mechanical: Hand pull or dig when soil is moist. Make certain to pull all the roots and wear rubber gloves and eye protection to protect yourself from the toxic milky sap. Treatment follow up is important to check root fragment resprouts that will occur when the tap root is severed too shallow.

Purple loosestrife: A perennial forb that spreads by seeds and rhizomes. It is often confused with the native Fireweed or the noxious weed Dames Rocket. It can be found in marshes, wet meadows, stream margins, lakeshores and wetlands and is often associated with cattails and willows.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal.

- **Chemical:** Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use. Herbicide selection **MUST** coincide with Colorado Department of Agriculture recommendations for this specific plant.
- **Biological:** Bio-control agents are not included in the prescribed management plans by the State for List A Species.
- **Mechanical:** Hand removal of isolated individuals can be effective on a small scale. Pulling should be conducted to seed set and it is important to remove the entire rootstalk of the plant to avoid regrowth from root fragments. It is important to bag and dispose of the pulled plants at the local landfill. Follow-up visits to the infested area throughout the summer are imperative.

Yellow star thistle: A winter annual that reproduces by seed and invades rangelands, pastures, roadsides, croplands and waste areas. It causes a neurological disorder called chewing disease in horses that eat it.

Management methods:

- **Cultural:** Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, grazing management is imperative for Yellow starthistle control, mainly to promote healthy desirable plants.
- **Chemical:** Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use. Herbicide selection **MUST** coincide with Colorado Department of Agriculture recommendations for this specific plant.
- **Biological:** Bio-control agents are not included in the prescribed management plans by the State for List A Species.
- **Mechanical:** Hand removal of isolated individuals can be effective on a small scale. Pulling should be conducted to seed set. It is important to bag and dispose of the pulled plants at the local landfill. Follow-up visits to the infested area throughout the summer are imperative.

“List B” Noxious Weeds

Absinth wormwood: A perennial forb or herb with a strong sage odor. The plant dies back to ground every year.

Management methods:

- **Cultural:** This plant is not generally considered a serious problem on well established pastures and rangeland. The plant tends to invade over-grazed or disturbed areas where there is little competition from other plant species. Therefore the best control measure for Absinth wormwood is prevention.
- **Chemical:** Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- **Biological:** None known at this time.

- Mechanical: Tillage can prevent the establishment of Absinth wormwood in crop production areas. Mowing may prevent seed production if mowed several times throughout the growing season. Burning is not effective and may increase populations.

Bouncingbet: A biennial forb that spreads by seed and rhizomatous roots. The plant is an escaped ornamental and is often found in large dese patches on hillsides, along rivers, roadsides, meadows and waste areas.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Biological: None known at this time.
- Mechanical: The most commonly recommended method for control is pulling or mowing before seed set with repeated visits/ treatments throughout the growing season.

Bull, Musk, Plumeless and Scotch thistle: These biennial weeds all require the same management methods. Biennials are best controlled in their first year of growth, commonly referred to as the rosette stage.

Management methods:

- Cultural: The best way to prevent or reduce the amount of biennial thistle is to manage areas that are susceptible to invasion by promoting vigorous stands of competing vegetation. Adapted grasses have been proven to be effective competitors against the biennial thistles. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726
- Biological: *Rhinocyllus conicus* is a seed head weevil, which is widely distributed in Delta County. This weevil consumes most of the seeds in the terminal flower heads, but has no effect on buds which form later in the season. The conicus weevil can be an effective control method only if it is combined with chemical or mechanical controls. *Trichosirocalus horridus* is a crown weevil, which feeds on the growing tip of the thistle rosette. This weevil has been released on numerous occasions in Delta County but has not yet become established.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Since these thistles are biennials and do not resprout, they are easily killed by tillage or any method that severs the taproot below the root crown of the plant. If dug or cut after seed heads have formed, the plants should be sent to a sanitary landfill in plastic bags to ensure seeds will not spread. Mowing is effective only if done when the first flowers are in bud stage. A second mowing may be necessary because the plants may recover and produce viable seed later in the growing season.

Canada thistle: A perennial weed with an extensive root system, Canada thistle reproduces both by seed and by vegetative buds on the roots. This weed requires a much more extensive management plan than the biennial thistles. Successful management of Canada thistle can be achieved with chemical control or by combining two or more of the control methods listed below.

Management methods:

- **Cultural:** Competitive grasses may be used to control Canada thistle infestations. Choose an array of aggressive adapted grasses with early, mid- and late season vigor to plant in areas where Canada thistle is present. For lists of these grasses please contact the Natural Resource Conservation Service at 970.874.5726. This staggered approach will allow the competitive grasses to stress the Canada thistle throughout the growing season. Dormant burning has shown some success by giving the native vegetation a competitive advantage.
- **Biological:** *Ceutorhynchus litura* is a stem weevil whose larvae mine tissues of the leaf, root crown and root. Outward signs of damage by these larvae are not readily apparent but other organisms, which enter the plants through exit holes made by the larvae, cause secondary damage. *Urophora cardui* is a stem gallfly whose larvae cause galls to form on the stem of Canada thistle plants. The galls reduce the plant's vigor, making it less able to compete with other plants or to resist pathogens or attacks by other insects. It is essential that both of these insects be combined with other methods of control for adequate management of Canada thistle.
- **Chemical:** Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- **Mechanical:** Mowing can be an effective tool when combined with herbicide treatment. Mowing alone is not effective unless conducted at two-week intervals over several growing seasons. Mowing should always be combined with cultural and chemical control. Cultivation may increase the number of plants by spreading the roots to new areas where they may become established.

Chamomile- Mayweed /Scentless: This escaped ornamental annual forb loves to become established in disturbed areas at higher elevations. Because of its ability to produce thousands of seeds, it can quickly become a threat to native plant communities.

Management methods:

- **Cultural:** Learn to identify the plants and physically remove them when they first appear. Seed with competitive, cool season grasses that out compete these plants at its early stage of growth. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726.
- **Biological:** None known at this time.
- **Chemical:** Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- **Mechanical:** Hand pulling or cultivation can control chamomile. Always bag and dispose of plants at the local landfill.

Common tansy: An introduced ornamental, which has the ability to competitively outgrow many of our native plants.

Management methods:

- Cultural: Keep existing native vegetation healthy. Common tansy may still be available from some out of state vendors. Please check all seed packets to be sure they do not contain this species.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: No specific recommendations are known; however, mowing or cultivation when possible will reduce seed production and stand density.

Dame's rocket: Introduced as an ornamental, Dame's rocket has been touted as "deer resistant", which was one of its main selling features. This plant is a biennial or short-lived perennial which reproduces by seed.

Management methods:

- Cultural: Keeps existing native vegetation healthy. As an ornamental plant this plant may still be available from some out of state vendors. Please check all seed packets to be sure they do not contain this species.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Hand pulling or cultivation prior to seed production will reduce the stand density of this plant. Revegetation should follow any control option.

Diffuse and Spotted knapweed: Biennial or short lived perennials which have become the most damaging wild land weeds in the inter-mountain area. Early detection and management of invading plants is the key to managing knapweed.

Management methods:

- Cultural: Seeding with adapted grasses can inhibit the spread of knapweed in dry climates. For a list of these grass species please contact the Natural Resource Conservation Service at 970.874.5726.
- Biological: Contact the Colorado Department of Agriculture Insectary for recommendations at 970.464.7916.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.

- Mechanical: Deep root removal can reduce stand density.

Hoary cress (Whitetop): A perennial plant that is very competitive with native vegetation. Its early seeding habits make it difficult to effectively control in a timely manner.

Management methods:

- Cultural: The effectiveness of mowing or cultivating will be increased if perennial grasses are planted as competitor species. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726. Promote healthy grass stands by using proper irrigation and fertilization techniques. Promptly revegetate all disturbed areas with an adapted grass to prevent establishment of this species.
- Biological: No insects are known to be effective for controlling this weed.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: No scientific data is available on mechanical control for this species. Mowing just prior to seed set may reduce overall seed production, but must be repeated several times during the growing season.

Houndstongue: A biennial weed that is toxic to herbivores. The seeds, contained in pods, are covered with barbs, thus enabling them to stick to clothing or animal hair and making them easily transported.

Management methods:

- Cultural: Maintain vegetation in good condition through proper irrigation and fertilization and planting of adapted grasses. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Severing the taproot below the root crown will kill Houndstongue. After cutting, if the plants are in pre- to post-bloom, they should be disposed of at the landfill to prevent seed formation.

Jointed goatgrass: This winter annual grass is a serious weed in winter wheat and other cereal crops. Since it strongly resembles winter wheat it is very difficult to control without harming crop production and it can rapidly infest rangelands adjacent to infested fields.

Management methods:

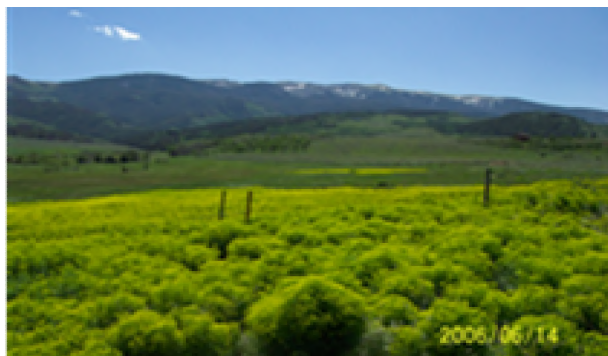
- Cultural: Seeds are difficult to distinguish from wheat and are often spread by being planted with wheat or by uncleaned combines. Spread can be minimized by sowing weed free seed, covering trucks transporting contaminated grain and thoroughly cleaning equipment prior to moving from field to field.

- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Mowing can be an effective control method if it's correctly timed. Mow soon after Jointed goatgrass flowers, but before seeds mature.

Leafy spurge: A deep rooted creeping perennial that spreads by seed and rootstocks. An extensive root system with vast nutrient reserves makes this plant extremely difficult to control. A combination of insects, grazing, plant diseases and chemical methods will be necessary to stress the plant sufficiently to attain acceptable control.

Management methods:

- Cultural: Seeding with adapted perennial grasses can be an effective management tool. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726. Early emerging plant species that utilize early season moisture have reduced Leafy spurge density and limited the spread and establishment of new infestations.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Biological: Grazing with sheep or goats can stress Leafy spurge making it more susceptible to other control methods. *Aphona flava* and *Aphona nigriscutis* are two species of flea beetles that have been introduced to attack leafy spurge. Adults feed on foliage during summer and lay eggs at the base of spurge plants. The larvae tunnel through the soil and mine the roots, as well as the fine root hairs. These insects alone will not control leafy spurge, but they can weaken the plant making it more susceptible to herbicide treatments or other control methods. These can be purchased from the Colorado Department of Agriculture Insectary at 970.464.7916.
- Mechanical: Mechanical methods have not been proven to be an effective management tool on this plant.



Leafy spurge infestation in hay meadow

Musk thistle: (see Bull thistle)

Oxeye daisy: A short-lived perennial forb, this plant has taken over many native high altitude areas in Delta County.

Management method:

- Cultural: Maintain vegetation in good condition through irrigation, fertilization and adapted grasses. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Mowing will not affect stand density or duration. Hand pulling can result in good control as long as the plants are pulled prior to seeding and disposed of properly. Repeated cultivation twice a year for two years will slow the spread and reduce seed population. Seeding with competitive grasses should follow any of these treatments.

Perennial pepperweed: This plant was introduced from Eurasia. It has a vast underground root system and can be a very aggressive colonizer of disturbed sites and native vegetation stands.

Management methods:

- Cultural: The effectiveness of mowing or cultivation will be increased if perennial grasses are planted as competitor species. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726. Promote healthy grass stands by using proper irrigation and fertilization techniques. Promptly revegetate all disturbed areas with an adapted grass to prevent establishment of this species.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Mowing just prior to seed set may reduce overall seed production, but must be repeated several times during the growing season.

Plumeless thistle: (see Bull thistle)

Russian knapweed: A creeping perennial weed, which, once established, becomes extremely difficult to control. In heavy infestations, few plants can grow in competition. Allelopathic chemicals have been extracted from Russian knapweed.

Management methods:

- Cultural: Dry range, seeded with adapted grasses, can cause stress in Knapweed by using up moisture prior to the weeds spring growth. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726 or the Delta County Noxious Weed Department.
- Biological: A leaf and stem gall-forming nematode (*Subanguina peridus*) has been released in the U.S and has shown limited success in controlling Russian knapweed. Contact the Colorado Department of Agriculture Insectary at 970.464.7916 for more information.

Grazing with goats has shown to be somewhat successful in limiting seed production and stressing this plant.

- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Due to the extensive energy reserves in the root system, removal of top growth alone will not provide adequate control of Russian knapweed. In fact, recent studies have shown that mowing alone increases Russian knapweed density and stimulates growth.

Russian olive: A deciduous introduced shrub or small tree that grows up to 30 feet high. The crown is usually dense and rounded.

Management methods:

- Cultural: Learn to identify the plants and physically remove them when they first appear.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Cutting or burning in combination with herbicide treatment of stumps, can prevent Russian olive from sprouting from the root crown.

Saltcedar (Tamarisk): An aggressive, invasive woody deciduous that can be a loosely branched shrub or tree.

Management methods:

- Cultural /Preventive: No matter how effective initial treatment is, it is important to re-treat any Saltcedar plants not killed by initial treatment. Once Saltcedar is killed, other vegetation must be established to protect soil resources and to prevent reinvasion.
- Biological: Chilik Saltcedar leaf beetle. Use must be approved by the Colorado Department of Agriculture 970.464.7916.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: As an addition to herbicides, a bulldozer or prescribed fire can be used to open up large stands. Once removed, any resprouts need to be treated with an herbicide.

Scentless chamomile: (see Chamomile)

Scotch thistle: (see Bull thistle)

Spotted knapweed: (see Diffuse knapweed)

Wild caraway: A biennial or sometimes perennial forb is commonly found in mountain meadows, hayfields, and along irrigation ditches and roadsides.

Management methods:

- Cultural: Wild caraway plants are sensitive to root disturbance and could be eliminated by tilling, although such practices are not likely to be suitable for natural areas. Best preventative practices include the elimination of seed production, and maintaining healthy native communities.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Wild caraway plants can be cut or pulled prior to seed set.

Yellow toadflax: An introduced creeping perennial that has proven to be aggressive and difficult to manage.

Management methods:

- Cultural: Maintain vegetation in good condition through irrigation, fertilization and planting of adapted grasses. For a list of these grasses please contact the Natural Resource Conservation Service at (970) 874-5726 or Colorado State University Extension Office at (970) 874-2195.
- Biological: The *Calophasia lunula* moth larvae can reduce the root reserves and general vigor of Yellow toadflax by defoliating new growth and eating buds and flowers. *Gymnetron antirrhini* is a capsule weevil, which can reduce the amount of seed produced but has little, if any, effect on stand density. Contact the Colorado Department of Agriculture Insectary at 970.464.7916 for more information. Combine the use of either of these insects with chemical or mechanical control for best results.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Mowing will not affect stand density or duration. Hand pulling of small areas can result in good control as long as the plants are pulled prior to seeding and disposed of properly. Repeated cultivation twice a year for two years will slow the spread and reduce seed population. Seeding with competitive grasses should follow any of these treatments.

“List C” Noxious Weeds

Chicory: A perennial forb that can be found along roadsides, in pastures and in disturbed areas.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.

- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Biological: None known at this time.
- Mechanical: The most commonly recommended method for control is pulling or mowing before seed set with repeated visits/ treatments throughout the growing season.

Common burdock: This plant is a biennial forb which is commonly found along roadsides, ditchbanks, pastures and waste areas. It generally prefers riparian areas that have moist fertile soils with high nitrogen contents. The hooked spines of the flowers attach to anyone / anything that brushes up against it and helps to spread the plant to other areas.

Management methods:

- Cultural: The best way to prevent or reduce the amount of biennial burdock is to manage areas that are susceptible to invasion by promoting vigorous stands of competing vegetation. Adapted grasses have been proven to be effective competitors against the biennial burdock. For a list of these grasses please contact the Natural Resource Conservation Service at 970.874.5726 or Colorado State University Extension Office at (970) 874-2195.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: They are easily killed by tillage or any method that severs the taproot below the root crown of the plant. If dug or cut after seed heads have formed, the plants should be sent to a sanitary landfill in plastic bags to ensure seeds will not spread. Mowing is effective only if done when the first flowers are in bud stage. A second mowing may be necessary because the plants may recover and produce viable seed later in the growing season

Common mullein: A biennial forb that is found throughout Colorado in pastures, meadows, fencerows, waste areas, and along river bottoms.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- Biological: A Curculionid weevil that is specific to Common mullein has been introduced and is capable of reducing seed production by 50%. Contact the Colorado Department of Agriculture Insectary at 970.464.7916 for more information.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Pulling before seed set, digging, mowing or cutting are effective methods of control.

Downy brome (Cheatgrass): An annual or winter annual grass that is found in recently burned rangeland and wild lands, winter crops, waste areas, abandoned fields, eroded areas and overgrazed grasslands.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- Biological: Livestock grazing can be helpful with two grazing periods each spring required for at least two consecutive years.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Cutting is not recommended. Plants cut before seed ripening will produce new stems and seeds at the cut height. Hand-pulling small infestations eliminate current seed production, but will not eliminate the infestation.

Field bindweed: A deep-rooted perennial forb that is a serious threat to native plant communities because it has such great capacity for regeneration.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- Biological: Contact the Colorado Department of Agriculture Insectary for recommendations at 970.464.7916.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Cutting, mowing, or pulling have negligible effect unless the plants are cut below the surface in the early seedling stage.

Halogeton: An annual forb that reproduces by seed. It can resemble Russian thistle in early stages of growth. The plant is high in oxalates and is a serious health threat to grazing animals, especially sheep. It quickly invades over grazed or disturbed areas

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities. Avoid overgrazing.
- Biological: None known at this time.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.

- Mechanical: Hand pulling or mowing before seed set and repeatedly throughout the growing season can be effective.

Johnsongrass: A warm season perennial grass which invades irrigation ditches, waste areas, roadsides, crops and disturbed ground. When under frost or moisture stress it becomes toxic to livestock.

Management methods:

- Cultural: May be controlled through fall and winter cultivation which exposes cold-sensitive rhizomes.
- Biological: None known.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Small infestations can be controlled by hand pulling when the soil is moist. Mowing after seed development but before flowering can be used for control but must be repeated throughout the growing season.

Poison hemlock: A biennial forb that is poisonous to livestock, wildlife and humans. The plant is scattered in riparian areas, along streams, roadsides ditch banks and irrigation ditches.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- Biological: The European palerctic moth feeds on Poison hemlock. Contact the Colorado Department of Agriculture Insectary at 970.464.7916 for more information.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Poison hemlock can be controlled by digging, repeated mowing, pulling or by spring/winter burns. **Always take wear gloves and long sleeves when handling this plant. When burning, where a mask and don't inhale fumes.**

Puncturevine (Goatheads): This annual forb has spiny burs and can be toxic to livestock. It grows along roadsides, in pastures, cultivated fields and wastelands.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- Biological: Contact the Colorado Department of Agriculture Insectary at 970.464.7916 for information.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.

- Mechanical: Digging, handpulling or tilling before flowering and seed dispersal as needed throughout the growing season will reduce / eliminate populations.

Quackgrass: This perennial grass is well adapted to moist soil and cool temperatures. It quickly invades moist eroding soils, mixed grass prairies, stream banks, roadsides, ditches, crop field and any other disturbed moist soil.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- Biological: None known.
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Mowing can be an effective tool when combined with herbicide treatment. Mowing alone is not effective unless conducted at two-week intervals over several growing seasons. Mowing should always be combined with cultural and chemical control. Cultivation may increase the number of plants by spreading the roots to new areas where they may become established.

Redstem filaree: A winter annual or biennial forb that is a pioneer species in disturbed areas. It can be found along roadsides, gravel pits, wastelands and overgrazed areas.

Management methods:

- Cultural: Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities.
- Biological: None known
- Chemical: Contact the Delta County Noxious Weed Department, or a licensed commercial applicator, for specific recommendations for herbicide use.
- Mechanical: Mowing or burning after flowering but before seed dispersal as needed throughout the growing season will reduce / eliminate populations.

Colorado Noxious Weed Resources

- [Colorado Weed Management Association](#)
- [Colorado Dept. of Agriculture website](#) and [Noxious Weeds web page](#)
 - Steve Ryder, State Weed Coordinator: steve.ryder@state.co.us; 303-869-9034
- [Colorado State University Extension, Western Colorado Insects, Biocontrol website](#)
- [USDA Plants Database](#)

- [Colorado State University Extension-Delta County](#), 970-874-2195

